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Global Wood-based Batteries Market Growth (Status and Outlook) 2026-2032

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Abstracts

The global Wood-based Batteries market size is predicted to grow from US$ 59.91 million in 2025 to US$ 224 million in 2032; it is expected to grow at a CAGR of 20.5% from 2026 to 2032.

Wood-based batteries refer to a class of emerging energy storage devices that use wood or wood-derived materials (such as cellulose, lignin, or nanocellulose) as functional components in electrodes, separators, or electrolytes. They aim to achieve sustainable, low-carbon, and potentially biodegradable battery systems by leveraging the natural porous structure and chemical functionality of wood. The wood-based battery industry chain is still in an early-stage R&D and pilot commercialization phase. Upstream includes raw wood materials (softwood, hardwood, forestry residues), lignin and cellulose extraction processors, and nanomaterial modification suppliers.

The wood-based batteries market is currently at an early-stage transition from R&D to pilot-scale commercialization, and is widely regarded as an emerging segment within bio-based energy storage materials. The growth of this market is primarily driven by global decarbonization efforts, the circular economy transition, and increasing demand for sustainable alternatives to conventional battery components. Wood-based batteries utilize biomass derivatives such as cellulose, lignin, and hemicellulose, which are transformed through carbonization, nanostructuring, or material engineering into functional components for electrodes, separators, or electrolyte structures, replacing fossil-derived graphite and synthetic polymers.

This report presents a comprehensive overview, market shares, and growth opportunities of Wood-based Batteries market by product type, application, key players and key regions and countries.

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Segmentation by Type:

Rechargeable

Non-rechargeable

Segmentation by Material System:

Cellulose-based

Lignin-based

Wood-derived Carbon Electrodes

Hybrid Wood-polymer Systems

Segmentation by Battery Type:

Lithium-ion Modified Systems

Sodium-ion Batteries

Zinc-ion Batteries

Solid-state / Gel Batteries

Paper-based Disposable Batteries

Segmentation by End User:

Wearables

IoT Sensors

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Disposable Medical Electronics

Flexible Electronics

Low-power Energy Storage Systems

Others

Segmentation by Application:

Automotive

Defense

Medical

Power

Consumer Electronics

Others

This report also splits the market by region:

United States

China

Europe

Other regions

Japan

South Korea

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Southeast Asia

Rest of world

The report also presents the market competition landscape and a corresponding detailed analysis of the major players in the market. The key players covered in this report:

Stora Enso

UPM-Kymmene Corporation

Borregaard

Sappi Limited

Green Science Alliance

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